REMARKS

Reconsideration and allowance of the claims are requested.

The examiner has noted several objections to the claims based on 35 U.S.C. §112, second paragraph, which have been corrected by the foregoing amendments.

The examiner has objected to claims 1-24 as not being enabled for all forms of electromagnetic radiation. However, there is no requirement for the applicant to give examples of each and every possible embodiment of his invention. A preferred embodiment is described herein, and the specification is replete with description that the electromagnetic spectrum is suitable for practicing the invention. Electromagnetic radiation imparts an energy transfer that is detected according to the present invention. A description of every conceivable example of how that concept could be practiced is not required by the Patent statute.

The prior art relied upon by the examiner does not teach or suggest the use of "microcantilevers." These are of such a size and distribution that they can be effected by an external radiation source. The effects are measured and correlated to indicate the presence or absence of a particular radiation.

The claimed invention relates generally to detection of radiation by monitoring radiation-induced changes in

microcantilever behavior. Two radiation-induced effects are noted: heat and material change (damage, modulus change, stress, polymerization, etc.). These could also be classified as reversible (heat) or non-reversible (dosimetric).

Electromagnetic radiation can be detected according to the principles of the invention through radiation-induced heating effects; Applicants also demonstrate ultraviolet detection by irreversible radiation-induced changes to a polymer coating.

Nuclear radiation includes gamma radiation, which is electromagnetic radiation, and also alpha and beta radiation, which are particles. These latter two types of nuclear radiation, i.e., alpha and beta radiation, induce a significant amount of material damage to the absorbing material; this damage can be monitored through the mechanical resonance of a microcantilever according to the principles of the invention. Heating in this case is minimal (but not zero) for ordinary amounts of radiation. There are different ways to classify microcantilever interactions, but in each case there is a predictable response.

Claims 1, 2, 5, and 17 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,427,881 to Ruell, hereinafter Ruell '881. This rejection is respectfully traversed.

In Ruell '881, "Due to the different temperature coefficients of expansion, the coatings 32 and 34 will bend the first light transmitting fiber 28, 30 in accordance with the sensed temperature T." (col. 5, lines 13-16). "Attached to the frame 42 is a rod 44 which serves to move the lens device 40 linearly under the influence of the physical parameter p. The parameter p to be measured may be, for instance, pressure or temperature." (col. 5, lines 31-35). Thus, Ruell '881 is directed to measuring temperature, pressure, or another unspecified parameter ("p"), but not radiation. Temperature is not the same thing as radiation.

Claims 1, 2, 4, 5, 7, 11, 12, 17-19, 22 and 23 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,762,426 to Foss, hereinafter Foss '426. This rejection is respectfully traversed.

Foss '426 "utilizes temperature or humidity sensors which require no electrical circuitry whatsoever and are read out by simple optical techniques to permit low cost sensing in remote or inaccessible areas." (col. 1, lines 16-20). Thus, Foss '426 is directed to monitoring temperature and humidity, but not radiation. Applicants claim detecting radiation. (See claims 1 and 17). Temperature and humidity are not the same as radiation. Temperature and humidity measurement are not analogous to the claimed invention.

"As the sensor temperature (or humidity for humidity sensor) changes, the reflectance of the corner cube changes such that the measured reflectance is then functionally related to the sensor temperature. To avoid absolute calibration problems of the reflectance caused by fogging or dirt on the corner cube, the cube contains the reference region 23 which is spectrally filtered from the temperature sensor region 24 such that it can be used as a reference reflector on the cube sensor." (col. 1, line 65 - col. 2, line 6). Thus, Foss '426 uses a reference surface to account for changes in atmospheric transmission and array or window contamination; this has nothing to do with properties being measured, it has only to do with reflectivity compensation.

Claims 1, 3, 6, 10, 13, 17 and 18 have been rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,550,516 to Burns et al., hereinafter Burns '516. This rejection is respectfully traversed.

Burns '516 discloses "a resonant strain transducer which can be augmented by an appropriate microstructure to measure pressure, acceleration, force and other applied stimuli." (col. 1, lines 51-54). "Depending on the design of the microstructure formed monolithically with the microbeam, the induced strain can be caused by and not limited to pressure, acceleration, temperature, air flow or humidity." (col. 2, lines 41-44).

Thus, Burns '516 is directed to measuring pressure, acceleration, force, other applied stimuli, and acceleration, temperature, air flow, and humidity, but not radiation. Burns '516 doesn't show radiation detection as recited by the claims. In col. 9, line 67 through col. 10, line 1, Burns '516 states, "Such microbeam structure 150 has application as a temperature sensor as the resonance frequency of structure 150 would change with respect to the temperature of structure 150." Again, ambient temperature measurement is not radiation measurement.

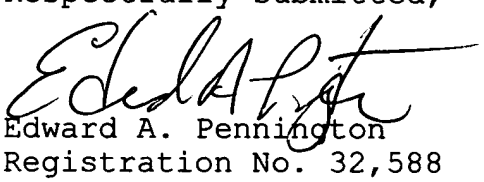
Claims 8, 20, 21 and 25 have been rejected under 35 U.S.C. § 103 as being unpatentable over Foss '426. Claims 9 and 14-16 have been rejected as being unpatentable over Burns '516. This rejection is respectfully traversed.

It is respectfully submitted that neither Foss '426 nor Burns '516 is directed to the radiation detection art to which Applicants' claims are specifically directed. It is submitted that a skilled artisan reading such cited patents would not have appreciated the problem discovered and solved by the present Applicants, i.e., the problem of detecting radiation. If there is no appreciation of the problem, it is submitted that there can be no suggestion (express, implied or otherwise) to use or combine the teachings of the references to solve such problem, thus to arrive at Applicants' claimed invention.

The applicant notes the examiner's indication of allowance with respect to claim 24.

Since the claims point out new and unobvious features not found in nor suggested by the references cited by the Examiner, reconsideration and allowance of the claims are requested.

Respectfully submitted,



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